



# **JOURNAL BRIEF: Making Strategic Investments in Bike Share Stations to Increase Usage**

Sustainable Healthy Cities Journal Brief - 2019, No. 13 - Bike Share Investment Strategies

This brief is adapted from the following peer-reviewed journal article: Wang, J. & G. Lindsey. (2019). Do new bike share stations increase member use: A quasi-experimental study. *Transportation Research Part A*. 121 (2019), 1-11.

## **Study Intent and Research Question**

Does the installation of more bike share stations increase use of the system among members? If so, is the effect the same for all members, in all areas of the city? This study considers changes in accessibility (distance) to bike share stations, either as a result of new construction or the relocation of old stations, for the Nice Ride bike share system in Minneapolis and Saint Paul (MN) analyzing whether such changes affect frequency of use by members, considering variation across neighborhoods.

## **Key Background Information**

Bike share programs have potential to solve the first mile and last mile problems associated with transit use, reduce traffic congestion by diversifying transportation options, provide environmental benefits by reducing greenhouse gas emissions, and bring health benefits by increasing physical activity (Shaheen et al., 2010).

Across systems, users are more likely to be white (Buck et al., 2013), wealthier (e.g. Fishman et al., 2015), younger (Shaheen et al., 2012), and more educated (Ricci, 2015).

Bike share members mainly use such systems for fulfilling commuting or utilitarian trips (Shaheen et al., 2012), but, many members do not use bike share frequently. For example, half of the members of the London bike share program in 2014 reported no use of the service in the prior month. Infrequent use by bike-share members suggests there might be opportunities to increase system usage through operational or system changes, promotional programs, incentives, or other strategies.

Broad categories of variables commonly researched for their effect on the use of bike share systems include socio-demographic characteristics, urban form and land use mix, transportation infrastructure, and weather/temporal variables.

## **Key Findings**

Distance to a station is an important variable affecting bike share system use. Members who experienced increased access (shorter distance) to a station were significantly more likely to use the bike share system than members who saw no change in station accessibility, but the overall increase was relatively small.

The effect of increasing station accessibility on usage is different for different populations and is affected by the characteristics of the built environment in their neighborhoods.

When station access was increased for members living in dense, mixed use environments, those members increased their usage more than members living in less dense and mixed-use environments that saw an equivalent increase in station access.

Additionally, the effects of increasing bike share station accessibility on use were larger in areas with denser bike share services to begin with.

Miles of bike lanes generally had a positive effect when looking across the Minneapolis-Saint Paul service area. However, it did not have a large effect on members who live in areas with fewer bike share stations, as those users are already more likely to use bike share for non-home trips (i.e. they use bike share when they are somewhere else in the city), so more bike infrastructure near their homes would logically have less impact on their bike share usage habits.

For members in areas with a high density of bike share stations, the construction of a new light rail station nearby was shown to decrease bike share use by more than 25%. For members in areas with a low density of bike share stations, the construction of a new light rail station nearby increased their bike share use by 7%, possibly indicating

that these members are more likely to combine bike share with another mode, such as light rail.

### Policy and Practice Implications

Simply reducing distances to bike share stations will not in substantial increases in frequency of use across all members. It will for some, but not for others; more multi-pronged approaches may be needed.

Installing new stations in neighborhoods with few stations without forming/connecting them as part of a dense network will likely not increase use.

Investing to yield the greatest increase in system use generally vs. to increase system use among populations currently underserved by the bike share system require different strategies.

There are likely thresholds in terms of both density of bike share stations and general bike infrastructure that need to be reached before meaningful increases in frequency of use are seen.

Individual station investments should be evaluated as part of a more comprehensive investment strategy that is concerned with reaching critical densities of both stations and general cycling infrastructure.



Transportation



Equity



Spatial Reconfiguration

### Further Reading and References

- Buck, D., Buehler, R., Happ, P., Rawls, B., Chung, P., Borecki, N., 2013. Are bikeshare users different from regular cyclists? A first look at short-term users, annual members, and area cyclists in the Washington, DC, region. *Transp. Res. Rec. J. Transp. Res. Board* 2387, 112–119. [OPEN ACCESS] [https://www.researchgate.net/publication/273196454\\_Are\\_Bikeshare\\_Users\\_Different\\_from\\_Regular\\_Cyclists](https://www.researchgate.net/publication/273196454_Are_Bikeshare_Users_Different_from_Regular_Cyclists)
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- Ricci, M., 2015. Bike sharing: a review of evidence on impacts and processes of implementation and operation. *Res. Transp. Bus. Manage.* 15, 28–38. [OPEN ACCESS] [https://www.researchgate.net/publication/275366881\\_Bike\\_sharing\\_A\\_review\\_of\\_evidence\\_on\\_impacts\\_and\\_processes\\_of\\_implementation\\_and\\_operation](https://www.researchgate.net/publication/275366881_Bike_sharing_A_review_of_evidence_on_impacts_and_processes_of_implementation_and_operation)
- Shaheen, S., Martin, E., Cohen, A.P., Finson, R., 2012. *Public bikesharing in North America: Early operator and user understanding*. Mineta Transportation Institute, San Jose, CA. [OPEN ACCESS] <https://transweb.sjsu.edu/sites/default/files/1029-public-bikesharing-understanding-early-operators-users.pdf>

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The Sustainable Healthy Cities Network is a U.S. National Science Foundation supported sustainability research network focused on the scientific advancement of integrated urban infrastructure solutions for environmentally sustainable, healthy, and livable cities. We are a network of scientists, industry leaders, and policy partners, committed to building better cities through innovations in infrastructure design, technology and policy. Our network connects across nine research universities, major metropolitan cities in the U.S. and India, as well as infrastructure firms and policy groups to bridge research and education with concrete action in cities.